

822 ROADSIDE IMPROVEMENTS

822.01 TOPSOIL

Topsoil shall consist of fertile agricultural soil capable of sustaining vigorous plant growth. It shall contain not less than 1.5 percent organic matter as determined by the Walkley- Block Method described in the Department of Agriculture Circular No. 757, and shall have a pH between 5 and 7.6. It shall contain not less than 15 percent silt, not less than 15 percent nor more than 50 percent sand and not less than 15 percent nor more than 40 percent clay. All topsoil shall be free of stones, roots, rubbish, and other objectionable materials such as Bermuda grass, poison ivy, and kindred roots. Topsoil shall not contain any material toxic to plant growth. Topsoil shall not be handled when frozen or so wet that it will become puddled or the soil structure destroyed. Only approved material shall be delivered to the project.

A 20 pound sample of topsoil shall be furnished by the Contractor at least 2 weeks prior to the anticipated use of topsoil. Topsoil sample shall be accompanied by certified soils analysis report from an approved laboratory, showing analysis was made not more than 30 days prior to report submission, contract number, topsoil source (and that the sample is from this source), pH, texture and percent organic matter.

822.02 FERTILIZER

(A) FERTILIZER FOR SEEDING. Fertilizer shall be a standard commercial grade as per standards of the Association of Official Analytical Chemists and shall contain the equivalent of 10 percent nitrogen, 6 percent phosphoric acid, and 4 percent potash by weight, and shall be applied to all seeding and sodding areas at the rate of 1,000 lbs. per acre.

Fertilizer shall be furnished in new, clean, sealed, and properly labeled bags.

(B) FERTILIZER FOR HYDROSEEDING (Crownvetch). Standard quality commercial 0-20-20 farm grade fertilizer shall be applied at the rate of 500 pounds per acre (12 pounds per 1,000 square feet) combined with Ureaform (38-0-0) or Blue Chip Nitroform, Kapco-38, or equivalent, applied at the rate of 400 pounds per acre (9 pounds per 1,000 square feet). Ureaform 38-0-0 shall meet the following additional requirements:

Total nitrogen (TN)	38.0 percent minimum
Water-insoluble Nitrogen	27.0 percent minimum
Activity Index (AI)	40.0 percent minimum
Urea Nitrogen	3.5 percent maximum

(C) STABLE MANURE USED FOR PLANTING. manure shall be well rotted, unleached horse and/or cow manure, free from shavings, sawdust, or refuse, and shall not contain material harmful to plant growth. It shall be not less than 6 months old nor more than 2 years old.

(D) UREAFORM FERTILIZER FOR PLANTING. ureaform fertilizer shall be granular or pelletized with a 38-0-0 analysis.

(E) LIME. Lime, if necessary to adjust soil pH for grass renovation, shall consist of an agricultural

calcic or dolomitic ground limestone containing at least 85 percent of total calcium and magnesium carbonates. Limestone shall be per standards of the Association of Official Agricultural Chemists.

Lime shall meet the following sieve analysis: At least 40 percent passing the No. 100 sieve and at least 95 percent passing the No. 8 sieve.

Lime shall be applied to all grass areas at the rate of 3,000 lbs. to the acre. It shall be evenly spread and well incorporated into the soil.

822.03 SEED

(A) SEED FOR GRASS. Seed mixes and seed shall meet the requirements listed in Table 822.03. The germination portion of Crownvetch seed shall consist of 35 percent normal sprouts and 35 percent hard seed.

Seed sown from March 1 to April 30 and from August 15 to October 31 shall be either Seed Mix No. 1, Seed Mix No. 2, or Seed Mix No. 3, as specified in the Special Provisions. If not specified or directed in writing, Seed Mix No. 1 shall be used.

Seeding with the above mixes at other than the indicated dates will be allowed upon written approval.

Seed Mixes No. 1 and No. 2 shall be sown at the rate of 100 pounds per acre or 2-1/2 pounds per 1,000 square feet.

Seed sown from May 1 to July 31 shall be Korean Lespedeza (*Lespedeza stipulacea*). This seed shall be sown at the rate of 40 pounds per acre.

Lespedeza seed shall be sufficiently and properly inoculated before being sown. The inoculation media shall be an adaptable "culture" of live nitrogen fixing bacteria. Only dated material shall be acceptable and shall be used during the date period specified.

The inoculant shall be a pure bred culture of nitrogen-fixing bacteria selected for maximum vitality and for the ability to transform nitrogen from the air into soluble nitrates for absorption into the soil. Inoculant shall not be used later than the date shown on the container. Suitable storage at a moderate temperature shall be provided at all times prior to usage to preserve maximum culture viability.

Seed sown at times other than indicated above shall be Annual Rye Grass (*Lolium multiflorum*), also referred to as companion nurse grass seed.

(B) CROWNVETCH SEED FOR HYDROSEEDING. Seed Mix No. 3 shall be used. Crownvetch seed, sown at the rate of 20 pounds per acre, shall be 95 percent pure with 70 percent germination of which 35 percent shall be minimum normal sprouts and the remaining hard seed. The total mixture, including the companion nurse grass seed, shall be sown at the rate of 80 pounds per acre or 1-3/4 pounds per 1,000 square feet.

All seed shall be from the last available crop. No seed shall be accepted with a date of test of more than 9 months prior to date of sowing. All seed shall be labeled, tagged, or marked in accordance with the best practice and according to law.

**TABLE 822.03
SEED MIXTURES**

	Purity (percent)	Germination (percent)	Maximum Weed Seed (percent)
SEED MIX NO. 1			
75% Kentucky Blue Grass (<i>Poa pratensis</i>)	85	75	0.75
20% Red Fescue (<i>Festuca rubra</i>) (Illahee Strain)	95	80	0.50
5% Red Top (<i>Agrostia alba</i>)	92	90	1.00
SEED MIX NO. 2			
70% Kentucky 31 Fescue (<i>Festuca elatior</i>)	98	90	0.50
30% Red Fescue (<i>Festuca rubra</i>) (Illahee Strain)	95	80	0.50
SEED MIX NO. 3			
35% Perennial Rye Grass (<i>Lolium perenne</i>)	98	90	0.50
35% Kentucky 31 Fescue (<i>Festuca elatior</i> <i>arundinacea</i>)	98	90	0.50
30% Crownvetch (<i>Coronilla varia</i> Var. Penngift)	95	70	
OTHER SEEDS			
Korean Lespedeza (<i>Lespedeza stipulacea</i>)	98	70	0.75
Annual Rye Grass (<i>Lolium multiflorum</i>)	98	90	0.50

822.04 MULCH

(A) MULCH FOR SEEDING. Material used for mulching in seeding areas shall be wheat or oat straw, rye or other approved hay or stems resulting from harvesting seed or approved herbaceous mowings. All mulch material shall be reasonably free from weed seed, mold, and foreign matter and shall not contain sticks larger than 1/4-inch in diameter.

Hay and straw mulch shall be in an air-dry condition and suitable for placing with mulch blower equipment.

Natural wood cellulose mulch shall be capable of dispersing readily in water and shall have no toxic effect when combined with seed or other materials. The homogeneous slurry or mix shall be capable of application with power spray equipment. Wood cellulose mulch shall be dyed green by a dye non-injurious to plant growth, shall be packaged in new labeled containers in an air-dry condition according to the standards of the Technical Association of the Pulp and Paper industry for wood cellulose fiber and have a pH of 8.5 to 10.0 in distilled water.

(B) MULCH FOR HYDROSEEDING. Mulch shall be a wood cellulose fiber, such as Conwed, or an approved equivalent. The material shall be processed to contain no growth or germination inhibiting factors and shall be colored grass green. The air dry weight of the material shall be determined according to standards of the Technical Association of the Pulp and Paper Industry for wood cellulose fiber.

822.05 SOD

Sod for residential areas shall be well rooted Kentucky Blue Grass (*Poa pratensis*) containing a growth of not more than 30 percent of other grasses and clovers and free from noxious weeds, Bermuda grass, wild mustard, and crabgrass. Soil adhering to roots shall be not less than 1 inch thick and as uniform as practicable.

Sod for non-residential roadside areas shall be a certified grass mixture of 90 percent Tall Fescue and 10 percent Kentucky Blue Grass, or a percentage acceptable to the Engineer. Improved varieties of Tall Fescue such as Finelawn, Bonanza, Mustang or Crossfire are acceptable. Sod shall be free from noxious weeds such as Bermuda grass, wild mustard and crabgrass.

822.06 PEAT

(A) PEAT MOSS FOR PLANTS AND PLANTING. Peat moss shall be granulated sphagnum peat moss nearly free from woody substances, consisting of at least 75 per cent of partially decomposed stems and leaves of sphagnum and essentially brown in color. Texture may vary from porous-fibrous to spongy-fibrous and shall be free from sticks, stones and mineral matter. Peat moss shall be in an air-dry condition, shall have a pH of 3.5 to 5.5, and shall otherwise be per federal regulation.

Peat moss shall be moistened prior to and at time of use.

(B) PEAT HUMUS FOR PLANTS AND PLANTING. Peat humus shall be a natural peat or peat humus from fresh water saturated areas, consisting of sedge, sphagnum, or reed peat and of a consistency that will pass through a 1/2 inch mesh screen. Humus shall be free from sticks, stones, roots, and other objectionable materials. Samples taken at the source of supply shall show the following analysis:

pH range	4.0 to 7.5
Water absorption ability	200 percent by weight min. on oven-dry basis
Organic content:	60 percent min. when dried at 105° C

Freshly excavated peat, if saturated with water, shall be stored for a sufficient length of time to condition it for workability.